

# GRADE 8

## STUDENT PRACTICE TEST BOOKLET

Student Name: \_\_\_\_\_



# MEA

Maine Educational Assessment

## RELEASED 2016 SCIENCE ITEMS

Maine Department of Education

# SCIENCE PRACTICE TEST

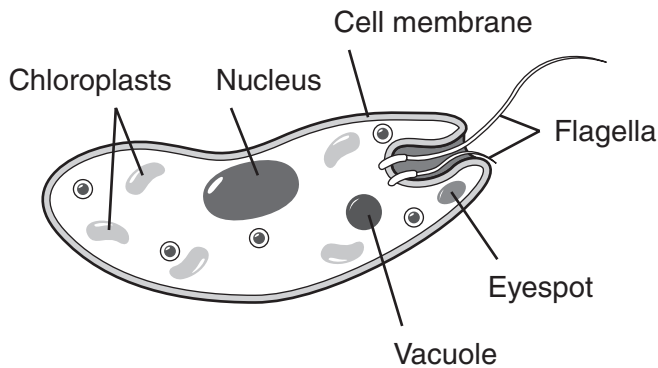
This practice session has twenty multiple-choice and two constructed-response questions.

Choose the best answer for each multiple-choice question and mark your answer choices for questions 1 through 20 in the spaces provided on page 2 of your practice test answer booklet.

- 1 A fox gave birth to an offspring that had a better sense of hearing than most foxes. How could this small change **most likely** result in descendants that are different from the original fox?
- A. Foxes that have a better sense of hearing may mutate more frequently than other foxes.
  - B. Foxes that have a better sense of hearing may be hunted more frequently.
  - C. Over time, descendants of this fox may hear and hunt prey better than other foxes.
  - D. Over time, descendants of this fox may become extinct.
- 2 Which statement **best** describes why the Moon is visible from Earth?
- A. The Moon reflects light from other planets.
  - B. The Moon reflects light from the Sun.
  - C. Light is produced by the Moon.
  - D. Light from Earth illuminates the Moon.
- 3 Which sentence **best** describes the organization of the heart?
- A. The heart is an organ made up of different types of tissues, each of which has different types of cells.
  - B. The heart is a tissue made up of different types of organs, each of which has different types of cells.
  - C. The heart is a system made up of one type of tissue and identical cells.
  - D. The heart is a tissue made up of one type of organ and identical cells.
- 4 A scientist studies the remains of two extinct animals to learn more about how they lived. She determines that one animal was a carnivore and the other was an herbivore. Which of the following did the scientist **most likely** compare to make this conclusion?
- A. the number of bones in the animals
  - B. the size of the animals
  - C. the body covering of the animals
  - D. the skull of the animals

PLEASE GO ON ➡

- 5 The diagram below shows a euglena.



Which pair of cell parts found in a euglena make it different from plants?

- A. chloroplasts and vacuole
  - B. nucleus and cell membrane
  - C. eyespot and flagella
  - D. chloroplasts and cell membrane
- 6 Solar radiation is a combination of light with different wavelengths. Which type of ray can harm human skin the most?
- A. infrared
  - B. microwave
  - C. ultraviolet
  - D. visible

- 7 What do all mammals have in common that distinguishes them from birds?

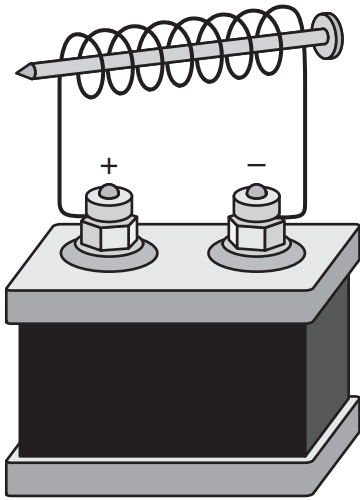
- A. eyes
- B. fur
- C. a brain
- D. a heart

- 8 A population of small, plant-eating beetles lives in a forest. About half of the beetles are light brown and the others are dark green. If years of drought cause the area to become dry with few trees, what would the beetle population **most likely** look like after several generations?

- A. It would be mostly light brown beetles.
- B. It would be mostly dark green beetles.
- C. It would be mostly carnivorous beetles.
- D. It would be mostly very large beetles.

PLEASE GO ON ➡

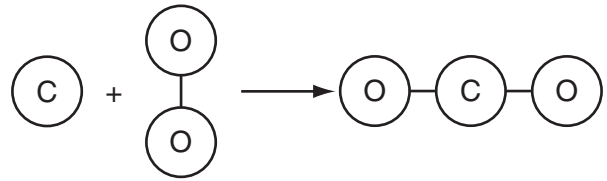
- 9 The diagram below shows an electromagnet.



Which statement **best** describes this application of an electromagnet?

- A. The magnetic field in the battery causes an electrical current in the nail.
- B. The magnetic field in the battery causes a magnetic field around the nail.
- C. The electrical current supplied by the battery causes an electrical current in the nail.
- D. The electrical current supplied by the battery causes a magnetic field around the nail.

- 10 The diagram below shows the formation of carbon dioxide.



Which statement about this reaction is correct?

- A. One atom of carbon combines with two atoms of oxygen to form one molecule of carbon dioxide.
- B. One molecule of carbon combines with two molecules of oxygen to form one atom of carbon dioxide.
- C. One element of carbon combines with two molecules of oxygen to form one element of carbon dioxide.
- D. One element of carbon combines with two elements of oxygen to form one atom of carbon dioxide.

PLEASE GO ON ➡

- 11 Genetically modified plants with new characteristics have been produced through genetic engineering methods. What impacts have resulted from the use of genetically modified plants?
- A. decreases in farm production
  - B. decreases in corn, soybean, cottonseed, and canola oils
  - C. increases in time required to plant, grow, and harvest crops
  - D. increases in resistance to herbicides, insects, and viral diseases
- 12 Which of the following is the **best** example of an event that causes a slow change in ecosystems?
- A. volcanic eruption
  - B. burning coal
  - C. forest fire
  - D. oil spill

PLEASE GO ON ➡

- 13 The table below shows characteristics of objects in our solar system.

W	X	Y	Z
<ul style="list-style-type: none"><li>• Atmosphere of hydrogen and helium</li><li>• Made of plasma</li><li>• Large mass and gravity</li></ul>	<ul style="list-style-type: none"><li>• Atmosphere of mostly nitrogen and oxygen</li><li>• Rocky surface</li><li>• Diameter 12,700 km</li></ul>	<ul style="list-style-type: none"><li>• Almost no atmosphere</li><li>• Rocky surface</li><li>• Diameter 3,500 km</li></ul>	<ul style="list-style-type: none"><li>• Atmosphere of mostly carbon dioxide</li><li>• Rocky surface</li><li>• Diameter 12,100 km</li></ul>

What should the headings W, X, Y, and Z be?

- A. W—Sun; X—Venus; Y—Earth; Z—Earth's Moon  
B. W—Venus; X—Earth; Y—Earth's Moon; Z—Sun  
C. W—Earth's Moon; X—Sun; Y—Venus; Z—Earth  
D. W—Sun; X—Earth; Y—Earth's Moon; Z—Venus

PLEASE GO ON ➡

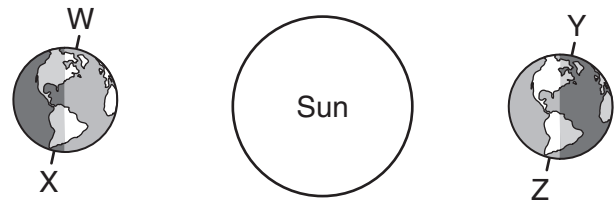
14 Which statement **best** compares single-celled and multicelled organisms?

- A. Tissues in a single-celled organism are like the cells in a multicelled organism.
- B. The nucleus in a single-celled organism is like the skin of a multicelled organism.
- C. Organelles in a single-celled organism are like the organs in a multicelled organism.
- D. The cytoplasm in a single-celled organism is like the nervous system in a multicelled organism.

15 Which list has objects in order from the smallest to the largest?

- A. Earth, the Sun, solar system, the Milky Way galaxy
- B. the Moon, the Sun, Earth, the Milky Way galaxy
- C. the Sun, the Moon, Earth, the Milky Way galaxy
- D. solar system, the Milky Way galaxy, Earth, the Moon

16 The diagram below shows the position of Earth during two solstices.



It is summer at which location(s)?

- A. W only
- B. X only
- C. W and Z only
- D. X and Y only

17 What is the basic unit of life?

- A. atom
- B. cell
- C. element
- D. nucleus

PLEASE GO ON ➡

18 What are two of Earth's natural resources?

- A. nuclear power plants and batteries
- B. forests and nuclear power plants
- C. batteries and waterfalls
- D. forests and waterfalls

19 In what unit of time does Earth orbit the Sun?

- A. day
- B. month
- C. year
- D. century

20 In which form is **most** of the energy released from gasoline when burned by an automobile?

- A. heat energy
- B. nuclear energy
- C. solar energy
- D. sound energy

PLEASE GO ON ➡



Write your answers to constructed-response questions 21 and 22 in the boxes provided on pages 2 and 3 of your practice test answer booklet. Be sure to answer and label all parts (a, b, c, etc.) of the questions.

- 21 The table below shows the densities of three materials and the speed of sound through each material.

**Speed of Sound through Different Materials**

Material	Approximate Density (g/mL)	Speed of Sound (km/hr)
Water	1.0	5,336
Air	0.00128	1,236
Aluminum	2.7	18,000

- Based on the data in the table, describe the relationship between the speed of sound through a material and the density of the material. Include evidence from the data to support your response.
- Describe the scientific concept that explains how sound waves interact with particles of matter.

PLEASE GO ON ➡

- 22 The picture below shows a tropical rain forest.



In each biome, plants and animals compete for resources.

- a. List **three** resources that organisms compete for in a tropical rain forest.
- b. For each resource listed in part a, give an example of how two organisms compete for that resource.

